

Abstract of the Invention

[8 6] Sensors for determining the ambient amount (e.g., concentration) of a chemical (e.g., molecular hydrogen in a gas or vapor) are disclosed. Preferred embodiments of these sensors comprise a dense thin metal (e.g., palladium or a palladium alloy) film disposed on a microcantilever beam that is suspended above a stationary baseplate. The dense thin metal film is configured to absorb, for example, hydrogen, thereby causing the film to expand which in turn causes the microcantilever beam to deform. The deformation can be measured, for example, as a change in capacitance between the microcantilever beam and the stationary baseplate. The measured change in capacitance is indicative of the ambient hydrogen concentration.